IN THE CLAIMS

Please amend claims 1, 11, 16, 93 and 95-98 as follows:

1. (Currently Amended) A system for maintaining a background model of an image sequence having a plurality of pixels, comprising:

a pixel processing module that processes the image sequence on a pixel scale;

a prediction module that provides history-based predictions for a value of each of the plurality of pixels; and

at least one refinement module that processes the image sequence on a spatial scale other than the pixel scale.

2. (Original) The system of claim 1, wherein the pixel processing module further comprises determining an initial background model and providing an initial pixel assignment to each of the plurality of pixels.

3. (Original) The system of claim 1, wherein a first refinement module is a region processing module that processes the image sequence on a regional scale.

4. (Original) The system of claim 3, wherein the region processing module further comprises considering a relationship between at least some of the plurality of pixels to provide pixel assignment.

5. (Original) The system of claim 3, wherein a second refinement module is a frame processing module that processes the image sequence on a frame scale.

6. (Original) The system of claim 5, wherein the frame processing module further determines a background model that most accurately represents an actual background of the image sequence and performs one of: (a) retaining a current

background model; (b) substituting a more accurate background model in place of the current background model.

7. (Original) The system of claim 5, further comprising a postprocessing module that provides enhancement of the image sequence.

8. (Original) The system of claim 7, wherein the enhancement is speckle removal.

9. (Original) The system of claim 7, wherein the postprocessing module provides enhancement after the pixel processing module and before the frame processing module.

10. (Original) The system of claim 7, wherein the postprocessing module provide enhancement after the frame processing module and before the region processing module.

11. (Currently Amended) A computer-readable medium having computer-executable modules, comprising:

a pixel processing module that processes an image sequence on a pixel scale and further comprising:

a prediction module that provides at least two history-based predictions of what value a particular pixel will be in a next frame of the image sequence to be processed and provides these predictions for each pixel within the image sequence; and

at least one refinement module that processes the image sequence on a spatial scale other than the pixel scale.

12. (Original) The apparatus of claim 11, wherein the refinement module processes the image sequence on scale larger than the pixel scale.

13. (Original) The apparatus of claim 12, wherein a first refinement module is a region processing module that processes the image sequence on a region scale.

14. (Original) The apparatus of claim 13, wherein a second refinement module is a frame processing module that processes the image sequence on a frame scale.

15. (Original) The apparatus of claim 14, further comprising a postprocessing module that provides enhancement of the image sequence.

16. (Currently Amended) A method for maintaining a background model of an image sequence having a plurality of pixels, comprising:

processing the image sequence on a pixel scale so as to determine a current background model and provide an initial assignment for each of the plurality of pixels;

calculating history-based predictors for a value of each of the plurality of pixels; and

refining the pixel processing by processing on a spatial scale other that the pixel scale to further refine at least one of: (a) the current background model; (b) the initial pixel assignments.

17. (Original) The method of claim 16, wherein refining further comprises providing a region processing module that processes the image sequence on a region scale.

18. (Original) The method of claim 17, wherein refining further comprises providing a frame processing module that processes the image sequence on a frame scale.

19. (Original) The method of claim 18, wherein refining further comprises providing a postprocessing module that enhances the image sequence.

20. (Original) The method of claim 19, wherein the postprocessing module enhances the image sequence by providing speckle removal.

Claims 21-92: (Canceled)

93. (Currently Amended) A system for background maintenance of an image sequence having a plurality of pixels, comprising:

a pixel processing module that processes the image sequence on a pixel scale;

a prediction module that provides at least two history-based predictions of a pixel value for each of the plurality of pixels; and

at least one refinement module that processes the image sequence on a spatial scale different from the pixel scale.

94. (Previously Presented) A method for processing an image sequence having a plurality of pixels, comprising:

processing the image sequence on a pixel scale to determine a current background model and provide initial assignments to each of the plurality of pixels;

calculating a plurality of predictors to provide predictions of a value of each of the plurality of pixels, the predictions based on an actual history of pixel values for the predicted pixel and a predicted history of pixel values for the predicted pixel; and

refining the pixel processing by processing on a spatial scale other that the pixel scale to maintain a background model of the image sequence.

95. (Currently Amended) A method for processing a current image frame of an image sequence to classify a pixel in the current image frame as a foreground pixel or a background pixel, comprising:

storing a list of actual history pixel values representing a history of actual pixel values for the pixel as determined in previous image frames;

predicting what value the pixel will have in a next frame of the image sequence using the list of actual history pixel values to generate a first pixel value prediction;

storing a list of predicted history pixel values representing a history of predicted pixel values for the pixel as determined in previous image frames;

predicting what value the pixel will have in a next frame in the image sequence using the list of predicted history pixel values to generate a second pixel value prediction;

determining an actual value of the pixel in the next frame of the image sequence; and

classifying the pixel as a foreground pixel if the actual value of the pixel in the next frame of the image sequence differs from any one of the first and second pixel value predictions by more than a threshold value.

96. (Currently Amended) The method of claim 95, wherein predicting what value the pixel will have in a next frame of the image sequence using the list of actual history pixel values to generate a first pixel value prediction further comprises using the formula:

$$s_{tp} = \sum_{k=1}^{p} a_k s_{t-k}$$

wherein s_{tp} is the first pixel value prediction at time t, s_{t-k} are the list of actual history pixel values, and ~~the~~ a_k are linear prediction coefficients~~, p is a number of prediction coefficients, and n is a number of actual history pixel values contained in the list of actual history pixel values~~.

97. (Currently Amended) The method of claim 96, wherein predicting what value the pixel will have in a next frame of the image sequence using the list of predicted history pixel values to generate a second pixel value prediction further comprises using the formula:

$$s_{tp} = \sum_{k=1}^{p} a_k s_{t-k}$$

wherein s_{tp} is the second pixel value prediction at time t, s_{t-k} are the list of predicted history pixel values, and ~~the~~ a_k are linear prediction coefficients~~, p is a number of prediction coefficients, and n is a number of predicted history pixel values contained in the list of predicted history pixel values~~.

98. (Currently Amended) The method of claim 96, further comprising computing the threshold value using the formula:

$$4.0 * \sqrt{E[e_t^2]}$$

wherein the expected squared prediction error $E[e_t^2]$ is given by the formula:

$$E[e_t^2] = E[s_t^2] + \sum_{k=1}^{p} a_k E[s_t s_{t-k}],$$

wherein , s_t is a pixel value prediction at time t, p is a number of prediction coefficients, and n is a number of actual history pixel values contained in the list of actual history pixel values.